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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

1 Appellant: Gorkem I. Ates
2
3 Series Code/Serial No.: 09/401,221 Filed: September 22, 1999
4 Group Art Unit: 2152 Paper No.: 20
5 Invention: INTERNET SYSTEM
6 Examiner: Hai V. Nguyen Agent's Doc. No.: ATEG21A
7
8 As article No.: EL58686/___/___/___ US EXPRESS MAIL I hereby certify, that on
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REPLY BRIEF

18
19 Sir:
20 Appellant files the instant Reply Brief in triplicate.

Paper No.: 20
S.N.: 09/401,221
Agt. Doc. No.: ATEG21A

Page 1 of 6

1 The Examiner states at page 14, paragraph 2 of the Examiner's Answer
2 that:

3 "The examiner has already shown and
4 replied in the last Office Action
5 (paper #15). Appellant's only
6 argument is 'a WAN is not equivalent
7 to the Internet' (Appellant's Brief,
8 pages 25-26). The Internet and the
9 Wide Area Network (WAN) are types of
10 communication medium used.
11 Therefore, the communication medium
12 used (the Internet or the WAN) is
13 relevant to execute the
14 functionalities of the limitations of
15 the claimed invention."

16 Appellant disagrees. Appellant respectfully resubmits that a WAN is
17 not equivalent to the Internet and is NOT relevant to execute the
18 functionalities of the limitations of the claimed invention as will be
19 shown infra.

20 A WAN (Wide Area Network) is a network which can be utilized over
21 relatively long distances, quite often between buildings and some times
22 transmitted over telephone lines or with a satellite transmission system.
23 Protocol can be what ever is agreed upon. Some common protocols include
24 TCP/IP, NetBEUI, IPX/SPX-compatible Protocol, WAN support for ATM, ATM
25 Call Manager, etc. The Internet, however, only permits TCP/IP protocol,
26 and is the largest WAN of all. Therefore, even though the Internet is a
27 WAN, a WAN is not necessarily the Internet. There is no reciprocity
28 between A WAN and the Internet. The Internet is not equivalent to Wide
29 Area Network.

30 Support for assertion that the Internet is not equivalent to a Wide
31 Area Network can be found in the declaration of Gary J. Levanti under 37
32 CFR 1.68 in lieu of affidavit under 35 CFR 1.132 traversing grounds of
33 rejection by distinguishing Internet is not equivalent to Wide Area
34 Network from each other submitted with appellant's Brief.

35 Further support for this assertion can be found in In re Gosteli,
36 872 F.2d 1008, 10 USPQ.2d 1614 (Fed. Cir. 1989), where the Court held:

37 "...species rejects genera, but the
38 converse is not necessarily so."
39 [Emphasis added]

40 In applying the decision of the Gosteli Court, it is revealed that
41 a WAN is a genus which cannot reject the specie of the Internet.

Paper No.: 20
S.N.: 09/401,221
Agt. Doc. No.: ATEG21A

Page 2 of 6

1 With Brendel et al's use of a WAN instead of the Internet, the
2 server 52 cannot be located anywhere in the world regardless of where in
3 the world the load balancer 70 is located ipso facto the load balancer 70
4 communicates with the server 52 over the discrete and/or distinct and/or
5 dedicated connection 120.

6 Additionally, Brendel et al. disclose at col. 20, lines 34-37:

7 "The web farm has been described as
8 having a "local" network, but this
9 local network could be local only in
10 the sense that it is not the Internet
11 backbone."

12 Brendel et al. teach communicating between the scheduler and the
13 server with a proprietary (OSI 3rd level) protocol called IXP.

14 In contradistinction, the present invention teaches communicating
15 with the participants (the equivalent of web servers in Brendel et al.)
16 from the main server (the scheduler) with the standard IP (Internet
17 Protocol) protocol so that the present invention can reside where there is
18 no specialized frame relay or ISDN or leased line communication between
19 the scheduler and the participant and when there is only a standard
20 Internet connection that is using the Internet backbone, which Brendel et
21 al. simply cannot do. The at least one participant server can be located
22 anywhere in the world regardless of where in the world the main server is
23 located.

24 The present invention is a system and method for allowing TCP/IP
25 servers to assign jobs to other servers dynamically without relocating the
26 client using neither HTTP nor HTML commands, wherein the "main server" is
27 the server of the ISP (the main TCP/IP server), the "participants" are the
28 servers that are assigned jobs, and the "client" is the client computer
29 that makes the actual request. The system and method of the present
30 invention depend upon the publicly known technique of "IP Spoofing" and
31 take the relocating process away from the top networking OSI layers, such
32 as TCP, HTTP and application level to the 3rd level of internetworking OSI
33 that is the IP. It enables Internet-wide load balancing and content
34 delivery with only a single IP involved as the listener.

35 In practice, the client requests a file or document from the main
36 server (a streaming video and/or audio file is typical).

37 The main server operates at the firewall/IP level and has an IP
38 stack (separate from the TCP/IP stack of the operating system) that can
39 forward packets to another host with a TCP/IP connection and a basic

Paper No.: 20
S.N.: 09/401,221
Agt. Doc. No.: ATEG21A

Page 3 of 6

1 database running that stores and retrieves the data of IP addresses and
2 the ports of the participant servers and the socket information (IP, port,
3 latest sequence number of the packet exchange as well as the TCP state) of
4 the client. The main server examines the client's IP address and seeks
5 the nearest participant server (the one that has the most bandwidth and
6 CPU, geographically closest, and other serving requirements needed to
7 serve a document to the client).

8 The main server, acting like an orchestra chief, requests the
9 participant to send the document client requested to the client packet-by-
10 packet, labeling each packet with the senders IP address being the main
11 servers IP address. This enables the client, which has a port open only
12 for a main server's address to accept the packets (the file). To
13 accomplish this goal, the main server examines the IP address port of the
14 packet. Then takes action as:

- 15 1. If the port of the specific client's socket does not have a
16 correspondence in the database (determined after a "SELECT" SQL
17 statement), which means that the client has just started a
18 connection with a SYN packet. Then this client socket is stored in
19 the database with four variables: IP address, port number, and TCP
20 state along with a timestamp for the socket; and
- 21 2. If the IP and port are present in the database as an active
22 connection (a connection that is transferring data or in a wait
23 state but not terminated), then the timestamp of the socket is
24 updated with the current time of the arrival of the latest packet.

25 The purpose of the timestamp is for a background thread in the main
26 server to clean the obsolete (closed) socket entries in the database. The
27 background thread does this by subtracting the timestamp from the current
28 time and comparing this value with a defined (by the main server
29 programmer or administrator) timeout value. If the timeout value is
30 exceeded then the database entry is deleted. This means that the socket is
31 indeed broken.

32 After that, the packet is modified. The source IP and port of the
33 packet are preserved. The destination IP and port of the packet are
34 changed to the listening IP and the port of the participant is selected as
35 being geographically closest and with the best free resources in terms of
36 CPU usage, volatile and non-volatile memory, and bandwidth.

Paper No.: 20
S.N.: 09/401,221
Agt. Doc. No.: ATEG21A

Page 4 of 6

1 The participant server processes the request as if it was directly
2 requested by the client since the participant does not know from the IP
3 packet that it was routed from the main server and thinks that the packet
4 actually comes from the client since the packet has the source IP of the
5 client. The participant sends the requested object with the sender's
6 address (source IP) of the main server's IP address at the IP level. This
7 may require root privileges under Linux. Other requirements may apply to
8 other systems.

9 When the client makes another request using the main server's IP
10 address, the client requesting packages are routed to the main server, NOT
11 to the participant server. This is the "normal behavior" of today's
12 networking equipment (i.e. routers) and software.

13 In live stream and the participant does not have the file requested,
14 than the file is first downloaded to the participant and than sent to the
15 clients. In the lack of multicasting this will distribute the load of the
16 main server to the participant servers and thus would save costs because
17 adding participant servers would be relatively easy and cheap to add than
18 clustering more servers to the main server.

19 The present invention:

- 20 1. Provides the advantages of multicasting such as low server and
21 bandwidth costs but without multicasting supporting hardware.
- 22 2. Is fast and flexible - the number of participants can be changed
23 dynamically with little cost compared to upgrading the main server.
- 24 3. Is not difficult to implement.
- 25 4. Relies on the fact that multicasting equipment is expensive and
26 ISP's are reluctant to upgrade and unless most of the net is
27 equipped with multicasting machines, multicasting won't operate
28 efficiently.
- 29 5. Participants are safe in the network against attacks such as denial
30 of service attacks because their IP addresses are not revealed to
31 the clients, and thus hackers.

32 In operation,

33 a main server is established. A participant Internet surfer enters
34 username, password, and other necessary information required for financial
35 processing to a form in a web page of the website of the present
36 invention. When a participant user decides to become active in the
37 system, it will surf to the website and enter his username, password. The

Paper No.: 20

S.N.: 09/401,221


Agt. Doc. No.: ATEG21A

Page 5 of 6

1 participant's computer will then load an applet (possibly written in
2 ActiveX or Java in 1999 terms) that will be the server software of the
3 "participant" (participant is the participating web surfer or company
4 computer). The applet will first calculate the participants CPU,
5 bandwidth, and memory power (and other necessary resources) and will start
6 a timer for the participant to start serving under rule of the main
7 server. Information about the participant will be recorded on a database
8 in the main server (main server may be any machine with at least one IP
9 address connected to the Internet backbone). When a web surfer requests
10 a file, the main server will search through its database of servers and
11 select the most appropriate server in terms of serving ability depending
12 on its previous evaluation of participants. The main server will command
13 the participant, via the open listening socket of the applet loaded in the
14 participant's machine, to serve the client. When the participant server
15 decides to go offline, the main server calculates the amount earned by the
16 participant Internet user and records it. At the end of a period,
17 participant person will get his money by check. The main server will have
18 the computing power of the net efficiently, cheaply, and dynamically at
19 its fingerprints. The main server will be the powerhouse between ISPs.

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RESPECTFULLY SUBMITTED


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Paper No.: 20
S.N.: 09/401,221
Agt. Doc. No.: ATEG21A

Page 6 of 6